

entirely freed of dust, and delivered in a pure state to the interior of the car, into which the exhaustion of the foul air will tend to draw it in a continued stream as long as the car is in motion.—The extension of the buildings required for the railway plant at Westminster is now in progress, and execution is being made to complete them as early as possible. There will be an engine-shed capable of containing about eighty engines, a fitting shop 427 feet in length, a boiler-making shop, a hoisting and firing shop, pattern-makers' rooms, various store-rooms, engineers' offices, &c. and a well-stocked Mechanics' Institute for the use of the men. There will also be a capacious engine-room, which will contain a large stationary engine, to be used for turning the lathes and other machinery.—The second tube of Chepstow bridge over the Wye, was to have been raised last week, but in consequence of the incompleteness of the arrangements, it has been found impracticable to raise it so early. A delay must now take place, as there will be no high tide available till about the 14th or 15th of this month. The tube is lying in the engineer's yard at Chepstow, apparently in a complete state, but the tackle for lifting it is not ready. The traffic over the one line of rails along the bridge, answers every purpose at present. It has been well tested by heavy trains lately.—The Egyptian railway works have been greatly advanced within the last few weeks. By 1st January, 1854, the communication, it is hoped, will have reached the capital; and, if the Viceroy is prosperous and supported, it is highly probable he will order its continuance thence to the Red Sea at Suez.—A railway company, called the Upper India, has made its appearance. Its plan is to commence at Allahabad, where the navigation of the Ganges for steamers terminates, and to carry an iron road in line to Lahore and the Indus. The country is favourable for the project, being generally flat. In the first instance the railway will only be constructed to Cawnpore.

THE REAPING MACHINES.

THERE can be no longer any doubt, it appears, of the decided superiority of the machine which has been for upwards of twenty years in steady operation, every harvest, on Mr. Bell's farm, of Lochmichael, in Perthshire. The Royal Irish Agricultural Society have expressed their unqualified admiration of its style of working, which, says *Semester's News Letter*, "surpassed everything that the most sanguine could imagine, so that all present expressed themselves astonished at its performance; and there can be no doubt that it will effect a revolution in agriculture; it left nothing to be done by the rake: the only heads left were those in binding. The machine had not to be stopped once, although the grass and clover were of considerable length." The *Irish Farmers' Gazette* speaks of it in similar terms:—"The implement performed its work in a most admirable manner: the stubble was left more even than by any possibility it could be done by the sickle, while the severed corn was laid as neatly and carefully as it could be by the hand; it cuts as clean as the scythe, and lays the corn better than it is possible to do by the latter implement." The report of the Irish Agricultural Society states that, "It appeared that, by fair average working, Mr. Bell's machine will cut, per day of ten hours, with two pairs of horses in yoke of two hours each, ten acres per day; while Mr. Robinson's machine, although having much merit as an improvement on Hussey's machine, was not capable of doing anything near so much work, nor quite so well."

As to McCormick's, the other American machine; at a trial at Keillor, in Scotland, it was declared on the part of Mr. Crosskill, its promoter in this country, that "it would be useless to contend against Mr. Bell's any longer, which he considered a far superior and more effective machine than any he had yet seen."

Under such circumstances, what are we to think of the "Agricultural Society of Scotland?" The fact that in many years since gave a prize of 50*l.* to Mr. Bell can only tend

to hasten the condemnation as a most useless association for the promotion of agriculture. It ought to have made the renown of such a machine (however really defective by comparison with future instruments) to have rung throughout the whole world for years ere now. Whereas it has allowed the very existence of it to remain unknown even in the country whose agriculture it pretends to foster and promote. After so gross an instance of neglect of obvious duty, our readers will not be surprised to learn that a gentleman, resident in Edinburgh, a Mr. John Richardson, intimate in the *Scotsmen*, that a model of a reaping machine, to be worked by steam, invented by him thirty-five years since, and placed, for preservation, in the museum of the Highland and Agricultural Society of Scotland, as he was without the means of experimenting with it in a working form, had been lost altogether, when he applied to have it transferred to the Great Exhibition! Noble patrons of science and of agriculture! A written request was not even acknowledged, but an examination of the museum proved the fact of the loss.

Other claimants to a share of the merit of originating the reaping machine are appearing. In the *Mechanics' Magazine* for 12th November, 1825, is a drawing of one by Mr. H. Ogle, a Northumberland schoolmaster, improved by Mr. Joseph Brown, of Alnwick, in 1823. This machine, however, does not resemble Bell's, but is almost identical with McCormick's, having a reciprocative motion applied to a long straight serrated cutting edge in place of the long scissors of Bell's. The late Mr. Smith, of Deanston, in Scotland, appears to have also invented a reaping machine; but we know nothing of its merits.

A new machine, on the principle of cutting with revolving scythes, has been invented by Dr. A. D. Brands, of Forres.

The solution of the five-shilling duty, it is thought, will be effected by the reaping machine, the saving being about equivalent to the duty.

RAILWAY SIGNALS.

BRING in the receipt of frequent consignments of, to me, a useless result of over-production, namely, the screams of passing railway engine-whistles, it has occurred to me that the sound might perhaps be beneficially confined to the sphere where it is useful, if, instead of being directed up in the air, the mouth of the whistle were placed close to the ground, and near the iron railway bars on one side of the engine, through whose sonorous nature the vibrations might be taken up, and perhaps transmitted to a much greater distance along the line than at present, though without the surrounding locality being so much disturbed by the sound. When on the look-out for an expected train, the railway officials might be instructed to stoop their ears to the bars, and listen for the whistle, as Indians lay their heads to the ground and listen for an enemy's footsteps; or to touch one of the bars with a stick, and apply the other end to the ear.

G. MACKENZIE.

THE KING'S CROSS TERMINUS.—GREAT NORTHERN RAILWAY.

THIS fine station is now completed, and will be opened for use in a few days. We published an engraving of the exterior, and a description of it, some time ago, and we now give an interior view, showing the station as it would appear if the front were removed, together with a plan of the whole, and details at large of the roofs. It is a very extraordinary work, and reflects honour on its designer, Mr. Lewis Cubitt. Each "shed" is 800 feet long, 105 feet wide, and 71 feet high to the crown of the semi-circular roof, without a tie. A brick wall, formed by piers and open arches, divides them. On the west side of the departure platform are the offices for the general administration of the affairs of the railway (including a booking hall, about 100 feet in length, 40 feet in width, and 45 feet in height), and on the east side of the departure platform the cab drive, 35 feet in width. There are

seven lines of way under each shed, with the necessary turn-tables and appliances. The roofs—semi-circular—are formed of laminated ribs, placed 20 feet apart, manipulated to their form on curbs or moulds, first formed of the required size and curve, and of inch-and-half boards or planks, at various lengths, the boards strongly screwed to each other at frequent intervals or spaces, no two joints of the boards being placed opposite to each other. Sufficient of these boards are screwed together to form 2 feet in depth, and they are 11 inches wide at the bottom and 9 inches at the top. The grain of the wood is so crossed by the construction of ribs from boards that they are rigid in the form or sweep the curb first confines them to, and when released from it they have no disposition to straighten. They are, however, maintained to their semi-circular shape by being fixed to iron stanchions in the walls, and by raking timbers attached to the top curve of the rib to the top part of the iron stanchion; and over this raking timber a portion of the roof-covering is formed by purlins, boarding, slating, and lead gutters. The higher portions of the roofs, which are glazed to the extent of two-thirds of the whole covering, are formed by longitudinal purlins fixed 8 feet apart; and thick plate-glass, in sheets of that length, are fixed, in sizes 2 feet 6 inches wide, divided by iron bars, rebated to receive them.

The buildings on the west side serve to resist any possible tendency on the part of the ribs to spread, and, on the other side, very strong trusses, with iron ties running from the lower part of the curved ribs into the outer wall of the cab-drive, serve the same purpose. The northern ends of the roofs are hipped in quadrantal form, the end of the ribs being supported on a strong truss, which runs from side to side, and admits of a gangway at the level of the springing. This is marked by dotted lines on the plan, but is not shown in the view. Fig. 1 is an elevation of one of the ribs with the iron stanchions. Fig. 2 is a section of the laminated rib, with the iron shoe to carry the purlin. Fig. 3 is a section of the purlin. Fig. 4 shows the ridge. And Fig. 5 is a plan of the whole station. The appropriation of the various parts of this is explained by the following:

REFERENCE TO ELEVATED PLAN.

- A. Oil stores and lamp-rooms.
- B. Guards' mess-room.
- C. Lost parcels.
- D. Porter.
- E. Refreshments.
- F. First class ladies.
- G. First class.
- H. Make-up office.
- J. Station clerk.
- K. Strong-rooms.
- L. News.
- M. Second class.
- N. Second class ladies.
- P. Telegraph.
- R. Porter.
- S. Waiting-room.
- T. Transfer of shares.
- V. Chief clerk.

MEDAL TO LIEBIG.—We learn from *Silliman's Journal* that a medal has just been issued by the medallist, Ferdinand Korn, in Mayence, in honour of the great chemist, Justus Liebig. The obverse presents a striking likeness of the chemist. The reverse presents an allegorical composition, consisting of a number of figures, among which the four principal ones are the personifications of Science in general, Chemistry, Botany, and Mineralogy, the others representing other sciences bearing upon chemistry.

PRACTICAL ART IN WOVEN FABRICS AND METALS.—Two professorships have recently been established for these specialties at Marlborough House, with the view of directing the studies of the pupils in classes, affording assistance to manufacturers and workmen who may seek it, and giving information to the public by lectures, &c. on the examples collected in the museum. Mr. Octavius Hudson is appointed to the office in the specialty of woven fabrics of all kinds, and Professor Semper to that of metal working of all kinds, including jewellery, enamel, &c.